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The Breast Cancer Resource for Research and Banking has accrued breast cells or tissues from 1342 patients during the three year grant period to date. The emphasis of this project is on the collection of microscopic at risk and precursor lesions as imprints/scrapes. These constitute over half of our specimens. However, most investigators who have requested samples have requested frozen pieces of tumor tissue paired with normal tissue from the same patient, ie. their interest has been in invasive carcinomas and not in precursor lesions. We have also begun to fill requests for microdissection, which is emerging as a favored method for studying microscopic lesions.

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Helen Fenio MD 12/10/97

PI - Signature Date

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## Introduction:

Translational research in the field of breast cancer requires the availability of human breast tissue at all stages of carcinogenesis. The "at risk" lesions for- and precursors of human breast cancer have been defined histologically and validated epidemiologically. Advances in mammography have resulted in the identification of an increasing number of women with at risk and precursor lesions of breast cancer. On the assumption that such tissue samples are as important to the understanding of breast cancer as clinical cancers, we have undertaken to establish a breast tissue bank that includes such samples.

## Methods:

Collecting at risk and precursor lesions of breast cancer, which are almost invariably microscopic, is difficult, firstly because the lesions are so small, and secondly because good medical practice requires that all the tissue excised be subjected to routine histopathologic examination in order to properly classify the lesion. Accordingly, we have been banking at risk and precursor lesions as well as very small cancers in the form of slide imprint/scrapes prepared from excised breast tissue prior to histopathologic examination.

Clinical cancers, that is invasive carcinomas that have resulted in a palpable mass lesion, are banked in standard fashoin as snap-frozen pieces of tissue, together with pieces of non-neoplastic breast tissue from the same patient, and a portion of lymph node when available.

As important as the collection of specimens is the publication of their availability. Publicising the Resource at NYU and nationally has been an important part of this project. The Resource has been publicised at NYU by the PI at various cancer research forums and by write-ups in the Kaplan Comprehensive Cancer Center's quarterly publication, Lab Notes. Outside NYU, the Resource has been included in the Breast Cancer Specimen and Data Information System, a collaborative project sponsored by the National Action Plan for Breast Cancer Biologic Resources Banks Working Group and the NCI. The DOD Breast Cancer Research Program "Era of Hope" in Washington DC in October/November 1997 provided another forum for publicizing the Resource.

An effort has been made to stimulate the use of banked tumor tissue and precursor lesions by soliciting proposals for pilot projects in translational breast cancer research. Such projects have been funded through an NCI-supported Breast Cancer Program within NYU's Kaplan Comprehensive Cancer Center (Breast Cancer Program Development Grant 5R21CA66229-02).

To obtain information on the quality and durability of banked tissues and cells, specimens obtained in 1995, 1996 and 1997 have been subjected to a variety of analyses. These analyses were immunohistochemistry, immunofluorescence microscopy, fluorescence in situ hybridization, and in situ hybridization. Analyses were done in various laboratories

at NYU that have expertise in these assays. Records are maintained on "Evaluation of banked Material" forms (Appendix 1).

To obtain feedback on the satisfaction of investigators with the material sent to them, two contacts are made with each recipient. The first is to determine the state of material given or shipped and occurs within a day or two of shipping. The second contact is made 6 - 18 months later to determine the level of satisfaction in terms of results obtained. User files are maintained for each recipient of samples. User records are initiated with "Investigator request" forms (Appendix 2)

In our original proposal we undertook to have a panel of scientists evaluate requests for samples. However, since the number of requests was lower than expected, particularly in the first two years, the procedure was simplified by obtaining basic investigator information by phone, and having investigators then submit a one page description of their intended research. The PI then authorized the filling of the request. Consultation with the Director of the NYU Breast Cancer Program was obtained when deemed necessary.

## Results:

The numbers of the various types of breast tissue samples that have been banked and entered into our data base between December 1 1996 and November 30 1997, the period covered by this report, as well as the cumulative numbers of samples for the entire grant period to date are shown in Tables 1 and 2.

## Table 1:

| | Grant year #3 12/96 - 11/97 | Cumulative 12/94 - 11/97 |
|---|---|---|
| Invasive ductal carcinoma | 86 | 316 |
| Invasive lobular carcinoma | 11 | 47 |
| Ductal carcinoma in situ* | 39 | 144 |
| Lobular carcinoma in situ* | 10 | 46 |
| Secondary carcinoma, lymph node | 35 | 83 |
| Lymph node without tumor | 51 | 81 |
| Fibrocystic change, non-proliferative | 11 | 189 |
| Frbrocystic change, proliferative** | 63 | 241 |
| Fibrocystic change, proliferative, w atypia** | 17 | 80 |
| Other (mostly fibroadenoma) | 46 | 148 |
| **TOTAL** | **369** | **1375** |

* precursor lesion; ** at risk lesion

## Table II:

| | Grant year #3<br>12/96 - 11/97 | 3 year cumulative<br>12/94 - 11/97 |
|---|---|---|
| Imprints/scrapes | 102 | 633 |
| Aspirated cells | 159 | 527 |
| Snap frozen tissue fragments* | 256 | 688 |
| **Total** | **517** | **1848** |

* includes 280 paired samples of breast cancers with normal tissue.

In Table 1 the breakdown is by type of lesion as defined histopathologically. In Table 2 the breakdown is by type(s) of samples available. Total number of samples in Table 2 exceeds total number of cases in Table 1 because some cases generated more than one sample type.

Table III indicates the number of patients from whom samples have been obtained during the period covered by this report and for the entire grant period to date. Table IV indicates the numbers of requests for specimens that have been filled over similar time periods.

## Table III:

| | Grant year #3<br>12/96 - 11/97 | 3 year cumulative<br>12/94 - 11/97 |
|---|---|---|
| # Patients with banked samples | 328 | 1342 |

**Table IV:**

| | Grant Year #3<br>12/96 - 11/97 | 3 year cumulative<br>12/94 - 11/97 |
|---|---|---|
| Requests filled for imprints | 0 | 2 |
| Requests filled for frozen tissue | 9 | 15 |
| Requests filled for tissue microdissection | 2 | 2 |
| **Total** | 11 | 19 |

As shown in Table II, we have reduced the numbers of imprint/scrape samples collected in year 3 of the grant. These represent samples of microscopic lesions, mainly in situ carcinoma and proliferative fibrocystic changes. The reason for this is twofold. Firstly, we now have a large collection of these lesions and requests for such samples have been very low. Secondly, the technique of microdissection has been gaining increasing favor as an alternative method for obtaining samples of microscopic lesions. Current amplification techniques allow the analysis of cells from a single microdissected duct or lobule of breast tissue. Microdissection can be done on frozen or on fixed, paraffin embedded tissue. Furthermore, the purity of specimens can be monitored by examination of sections before and after the microdissection is done. The success of this technique may be the reason for the underutilization of our imprint/scrape samples. Prior to the use of microdissection, scrapes/imprints represented the only means for obtaining precancerous and microscopic breast lesions for research purposes. The disadvantage of imprint/scrapes as compared to microdissection relates to the fact that imprint/scrape samples represent mixtures of cells, albeit the lesional cells predominate. In both instances the samples are small, but investigators prefer to use samples of known and verifiable purity. The identification and isolation of samples for microdissection is time-consuming and laborious, but we believe that we have made the right decision in partly turning our efforts in this direction.

There have been several opportunities for publicizing the Resource at NYU. It is scheduled to be written up again in the Kaplan Comprehensive Cancer Center newsletter, "Lab Notes" in January 1998. In 1997 the PI gave lectures on the Resource to the Kaplan Comprehensive Cancer Center Core Grant Working Group and at the NYU Breast Cancer Research Program (BCRP) Annual Retreat attended by approximately 30 Medical Center investigators working on breast cancer. She is also a major participant at the NYU monthly clinical multidisciplinary breast cancer conferences and a member of the executive committee of the NYU Breast Center, both of which provide forums for continually updating colleagues on the size of the Resource and the spectrum of available material.

Our Internet listing through the National Action Plan has generated 4 outside users of the Resource, one in 1996 and 3 in 1997.

The Breast Cancer Meeting, Era of Hope, identified several potential users, but thus far no requests have been received.

The NYU Breast Cancer Research Program has funded 3 additional pilot projects for 1998 emphasizing translational research. This should generate additional users.

Based on investigator feed-back, our efforts in filling requests for specimens and determining investigator satisfaction with specimens has produced results ranging from good to excellent. All investigators have been very satisfied with the state in which they have received specimens shipped or delivered to them. Feed-back from 1995, 1996, and

early 1997 recipients indicates that the material was suitable for the research techniques that they used.

Several slide-based techniques performed in the PI's department and elsewhere in the Medical Center produced good results of immunohistochemistry and immunofluorescence microscopy on archived samples. In situ hybridization and fluorescent in situ hybridization results were much inferior in banked material than in similarly obtained fresh samples.

## Conclusions:

The Resource contains 1848 specimens from 1342 patients. In year #3 we have changed direction somewhat in favor of processing specimens for microdissection and reducing the number of imprint/scrapes collected. This is the result of investigator requests and is part of a larger trend reflected in the literature.

Requests for snap frozen samples of established breast cancers, matched with normal tissue from the same patient are the most frequent requests received.

Sample preservation is satisfactory for some assays, but not for others.

Utilization of the resource is growing, 11 of 19 requests filled to date were filled in 1997. We anticipate that the 10 month extension of the grant period, to September 1998, will result in several additional users.

Based on user feedback we are meeting investigator needs.

NYU Medical Center

# NYU BREAST CANCER RESOURCE FOR RESEARCH AND BANKING

**Phone: (212) 263 8826-8079**
**Fax #: (212) 263 7916**

## RECORD OF EVALUATION OF BANKED MATERIAL:

Type of Specimen: Imprint _____ Frozen Tissue _____

Date of evaluation:

Duration in freezer:

Type of evaluation:

Results:

Entered by:

Signature and date:

NYU Medical Center

**Request for Tissue/Cells**
**NYU Breast Cancer Resource**
**Director: Helen D. Feiner, M.D.**
**560 First Ave. NY, NY 10016**
**Tel (212) 263-8826**
**Fax (212) 263-7916**

| |
|---|
| **Name:** |
| **Title:** |
| **Address:** |
| **Phone:** |
| **Fax:** |
| **e-mail:** |
| **Grant Support:** |
| **Material Requested:**<br><br>**Date Shipped:**<br>**Date Received:**<br>**State of Specimen on receipt:** |
| **Brief Summary of intended use:**<br>**(Use additional page if necessary)** |